



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/501,240

03/30/2005

Theodorus Johannes Brok

TS1175US

5321

23632 7590 09/04/2008  
SHELL OIL COMPANY  
P O BOX 2463  
HOUSTON, TX 772522463

EXAMINER

WU, IVES J

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

09/04/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/501,240

Filing Date: March 30, 2005

Appellant(s): BROK ET AL.

---

Charles W. Stewart

For Appellant

### **EXAMINER'S ANSWER**

This is in response to the appeal brief filed 8/13/2008 appealing from the Office action mailed 3/13/2008.

#### **(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

#### **(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

#### **(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

#### **(4) Status of Amendments After Final**

No amendment after final has been filed.

#### **(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

#### **(6) Grounds of Rejection to be Reviewed on Appeal**

#### **NEW GROUND(S) OF REJECTION**

The rejection of claims 1-4, 9, 12-16, 20 and 23 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wagner et al (US04997630)

#### **(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

#### **(8) Evidence Relied Upon**

4,997,630

Wagner et al

3-1991

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 1-4, 9, 12-16, 20 and 23** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wagner et al (US04997630).

As to 15 to 40 parts by weight sulfolane and between 30 to 60 parts by weight of an amine selected from the group of amines consisting of MEA, DEA, TEA, DIPA and MDEA, wherein the parts by weight to be based on the amounts of water, sulfone and amine together being 100 parts by weight in an aqueous washing solution in a process for removal of carbon dioxide from a gas stream containing carbon dioxide in **independent claim 1**, Wagner et al (US04997630) disclose a process for the removal of CO<sub>2</sub> and/or H<sub>2</sub>S from gases by means of an aqueous methyldiethanolamine-containing absorption liquid (Col. 1, line 8-11). The solvent used for the process to be aqueous absorption liquid containing from 20 to 70 preferably from 30 to 65, and in particular from 40 to 60 wt% of methyldiethanolamine (Col. 2, line 29-32). The aqueous absorption liquid containing from 20 to 70 wt% methyldiethanolamine can additionally contain a physical solvent. Examples of suitable solvents are N-methylpyrrolidone,

tetramethylene sulfone (**sulfolane**). The physical solvent is present in the absorption liquid in general in an amount of from 1 to 60, preferably from 10 to 50, in particular from 20 to 40 wt% (Col. 2, line 44-54).

As to 15 to 45 parts by weight of water in an aqueous washing solution in a process for removal of carbon dioxide from a gas stream containing carbon dioxide in **independent claim 1**, the balance of aqueous washing liquid of Wagner et al (US04997630) would be water, which reads on the limitation as claimed.

As to aqueous washing solution containing piperazine in an amount in the range of from 0.7 mol/l to 0.9 mol/l in **independent claim 1**, Wagner et al (US04997630) disclose, advantageously, the aqueous methyldiethanolamine solution used additionally contains from 0.05 to 1, in particular from 0.1 to 0.8, and especially from 0.1 to 0.6 mol/l of very particularly advantageously piperazine (Col. 2, line 35-43). Therefore, it would be obvious to have piperazine to be 0.7 mol/l to 0.9 mol/l because broad range of 0.05 to 1 mol/l includes the narrow range of 0.7 mol/l to 0.9 mol/l.

As to gas stream being natural gas or synthesis gas in **claim 2**, Wagner et al (US04997630) disclose examples of gases treated by the novel process being coal gasification gases, coke oven gases, natural gases and synthetic gases (Col. 2, line 19-21).

As to gas stream including an amount of carbon dioxide to be between 1 and 45 mol%, an amount of hydrogen sulphide to be between 0 and 25 mol%, and an amount of COS to be between 0 and 2 mol% in **claim 3**, Wagner et al (US04997630) disclose, the gases having a CO<sub>2</sub> content of in general from 1 to 90, preferably from 2 to 90, and in particularly from 5 to 60 mol%. In addition to the CO<sub>2</sub>, the gases can contain H<sub>2</sub>S as a further acidic gas, or can contain H<sub>2</sub>S alone (Col. 2, line 22-28). In any event, the amount of COS and H<sub>2</sub>S can be zero.

As to aqueous washing solution including an amount of water between 20 to 45 parts by wt, an amount of sulfolane between 20 to 35 parts by wt, and an amount of amine between 40 to 55 parts by wt, wherein the parts by weights are based on the amount of water, sulfolane and amine together being 100 parts by weight in **claim 4**, the disclosure of Wagner et al is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicants' claim 1, and have been discussed therein.

As to piperazine being in aqueous washing solution in amount in the range of from 0.6 to 0.8 mol/l in **claim 9**, the disclosure of Wagner et al is incorporated herein by reference, the most subject matter as currently claimed, have been recited in applicants' claim 1, and have been discussed therein.

As to process being carried out at a temperature of at least 20 °C in **claim 12**, Wagner et al (US04997630) disclose the 1<sup>st</sup> absorption stage at from 40 to 100 °C (Abstract).

As to process also comprising a regeneration of the loaded solvent in **claim 13**, Wagner et al (US04997630) disclose the laden absorption liquid obtained from 1<sup>st</sup> absorption stage to be regenerated by being let down in not less than 2 flash stages (Col. 3, line 32-53).

As to process to be carried out at a pressure between 25 to 90 bara in **claim 14**, Wagner et al (US04997630) disclose, in general, pressure of from 5 to 110, preferably from 10 to 100, in particular from 20 to 90 bar are employed in the 1<sup>st</sup> and 2<sup>nd</sup> absorption stages, and pressures in these two stages may differ from one another (Col. 3, line 16-20).

As to the composition in an absorbent liquid in **independent claim 15**, the disclosure of Wagner et al is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicants' claim 1, and have been discussed therein.

As to absorbent liquid including an amount of water between 20 to 45 parts by wt, an amount of sulfolane between 20 to 35 parts by wt, and an amount of amine between 40 to 55 parts by wt, wherein the parts by weights are based on amount of water, sulfolane and amine together being 100 parts by weight in **claim 16**, the disclosure of Wagner et al is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicants' claim 4, and have been discussed therein.

As to absorbent liquid having piperazine in an amount in the range of from 0.6 to 0.8 mol/l in **claim 20**, the disclosure of Wagner et al is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicants' claim 9, and have been discussed therein.

As to amine to be MDEA in **claim 23**, Wagner et al (US04997630) disclose an aqueous absorption liquid containing from 20 to 79 wt% of methyldiethanolamine (MDEA) (Abstract).

#### **(10) Response to Argument**

Art Unit: 1797

**ARGUMENTS:** In general, Applicants' arguments focus on the specific range such as piperazine from 0.7 mol/l to 0.9 mol/l and water to be from 15 to 45 parts by weight, 30 to 60 parts by weight of an amine, 15 to 40 parts by weight of sulfolane in the particular aqueous washing solution, where prior art Wagner et al (US04997630) only disclose a broad range for components MDEA – 20 to 70 wt%, piperazine (additional) – 0.05 to 1 mol/l as well as sulfolane (additional) – 1 to 60 wt%. In Example of Wagner et al (US04997630), while the amine component (50% strength by weight methyldiethanolamine) meets the 30 to 60 parts by weight amine limitation in the present claims, the absorption liquid used in Example does not contain sulfolane, does not contain piperazine and contains 50 % by weight water, which is outside the 15 to 45 parts by weight water limitation in the present claims (page 3-6, current Appeal Brief).

**RESPONSES:** The broad range of each component disclosed by Wagner et al (US04997630) such as MDEA (even optional such as piperazine, sulfolane) include the specific range of same component in Applicants' aqueous washing solution except range of water overlapped shown by the Example of Wagner et al where no piperazine or sulfolane is in the aqueous solution in the Example. Therefore, it would be obvious to have the specific range as claimed by Applicants. Moreover, disclosed examples and preferred embodiments do not constitute a teaching away from a broad disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971).

#### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (9) above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other

Art Unit: 1797

evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

**(2) Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

/I. W./

Examiner, Art Unit 1797 08-28-2008

**A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:**

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700

Conferees:

/Duane S. Smith/

Supervisory Patent Examiner, Art Unit 1797

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700



Application/Control Number: 10/501,240  
Art Unit: 1797

Page 8

Charles W. Stewart - Attorney